

ABSTRACT

A non-rotating electrodeless high-intensity discharge lamp system using circularly polarized microwaves is herein disclosed. In an embodiment, the lamp system has a first 5 rectangular waveguide (1) to propagate linearly polarized microwaves generated from a microwave source; an input circular waveguide (2) linearly connected to the first rectangular waveguide; a second rectangular waveguide (3) closed at an end thereof, and perpendicularly connected to a circumferential 10 surface of the input circular waveguide; an elliptical waveguide (4) linearly connected to the input circular waveguide such that the major axis of the elliptical waveguide is rotated to a predetermined angle relative to a horizontal 15 surface (or the wider surface) of the input rectangular waveguide; a second circular waveguide (6) linearly connected to the elliptical waveguide; and a discharge lamp (5) housed in a mesh cover(7), and supported by the second circular waveguide while being held on a reflecting mirror (9). The lamp system thus effectively converts the linearly polarized microwaves 20 into the circularly polarized microwaves due to a geometrical structure thereof caused by the angle at which the major axis of the elliptical waveguide is rotated relative to the horizontal surface of the input waveguide, thereby allowing the circularly polarized microwaves to reach the discharge lamp.